Physics Students' Level of Awareness of, Knowledge of and Attitude towards Practices Enhancing Attainment of Sustainable Development Goals in Anambra State, Nigeria

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ABSTRACT

The challenging impact of globalization, knowledge explosion and industrialization have persisted as major sustainable development issues in recent years. A lot of discussions have been on-going on how to sustain our environment, though it is still not certain whether it has really permeated into the fabrics of our everyday living in terms of putting into practice the recommendations of sustainable development goals set up by united nations educational, scientific and cultural organization (UNESCO). Enhancing attainment of SDGs to ensure that the younger generation is taken care of in our developmental ventures especially in Anambra State. Education system is a very appropriate medium to be used to sensitize the populace especially the younger on the importance of maintaining a sustainable culture. Physics is an important tool for technological development and as such, it is very important to find out the level of physics students' awareness of, knowledge of and attitude towards practices To this end, this study investigated Physics students' level of awareness, knowledge of and attitude towards practices that enhance sustainable development goals in Anambra State, Nigeria. The study adopted a survey research design. The population of the study was all the students studying Physics in all the public secondary schools in Anambra State, Nigeria totaling about 9,539 in 2020/2021 academic session. A total of 272 Physics students were sampled and used for the study using multi-stage sampling approach. A 36-item researchers-developed questionnaire arranged in three clusters was used for Data collection. Data was collected by administering the instrument to the respondents by the researcher with the help of two research assistants. The collected data was analyzed using mean and standard deviation to answer the research questions. The result of the analysis revealed that physics students have high level of awareness of, low level of knowledge of and poor attitude towards practices enhancing attainment of SDGs in Anambra State, Nigeria. It was also gained their sources of awareness mainly through fun activities and school cubs. Based on the findings, it was recommended among others that government in conjunction with curriculum planners should introduce in secondary schools, sustainable development clubs.

Keywords: Globalization, Industrialization, Knowledge Explosion, Sustainable Development, Awka Education Zone

INTRODUCTION

It is no new story to any reasonable human being that the planet earth and its inhabitants and ecosystems are facing a lot of problems connected with hunger, poverty, illiteracy, ill health, climate change and depletion of the ozone layer and our natural resources. The extent and the degree of mentioned problems and many more depends on a country's wealth, its level of education, technological development, social inequalities and concern for the environmental care. Solution of these problems should be the concern of all, individually and collectively, old and young since according to Morgan and O'Shea (2013) sustainable development starts with safe, healthy and well-educated children.

The role of education in molding the mindset of our younger generations and getting them realize and be committed to their responsibility towards achieving the SDGs cannot be over-emphasized. Education plays a

vital role to achieving the SDGs. Recognizing this obvious fact, the UNESCO averred that sustainable development cannot be achieved by technological solutions, political regulation or financial instruments alone, but also a change in the way we think and act. This, according to Ejechi (2018) is why the younger generation at all levels and in all social contexts should be educated with emphasis on SDGs.

Sustainable development goals (also known as Global goals), as posited by Shehu and Shehu (2018), are a set of priorities and aspirations to guide all countries in tackling the world's most pressing challenges including ending of poverty and hunger; protecting the planet from degradation and addressing climate change; ensuring that all peoples can enjoy prosperous, healthy and fulfilling lives, and fostering peaceful, just and inclusive societies free from fear and violence. They are a collection of 17 interlinked objectives designed to serve as a shared blueprint for peace and prosperity for people and the planet, now and into the future. They are adopted by the united nation (UN) in 2015 as a call-to-action for people worldwide to address five critical areas of importance by 2030 namely: people, planet, prosperity, peace and partnership (5Ps). The SDGs was adopted and signed by 193 countries that make up the UN and is built on over a decade of work by participating countries. SDGs consist of 17 goals, 169 targets and more than 200 indicators. These goals are created to supplant the MDGs (2000 - 2015) which helped to lift nearly one billion people out of extreme poverty, combat hunger and allow more girls have access to quality education. The SDGs resulted from the 2012 Rio +20 Earth summit which demanded the creation of an open working group to develop a draft agenda for 2015 and onward. All participating countries including Nigeria are working hard to achieve the SDGs by 2030 as targeted.

The achievement of SDGs especially in Nigeria will hinge firstly on its awareness, knowledge and also attitude towards it. Hence, the importance of educational system as the enlightenment point on SDGs. This has been duly recognized by international bodies like UN and UNESCO. The aim is to engage all peoples to be aware and knowledgeable of their rights and obligations in attaining SDGs so as to develop a positive attitude towards practices that can enhance this attainment. Knowledge here is regarded as the insights of people about certain topics, such as SDGs; attitude is all about developing concern and feeling towards the planet earth and life on it. Attitude refers to a person's proclivity to categorize objects and situations and to react to them in a consistent manner. People acquire attitudes as a result of various learning experiences; if the experience is pleasant, a positive attitude is produced, otherwise a negative attitude is formed (Chikendu and obiekezie, 2021). Some people's attitudes are formed based in their own experiences, knowledge and talent while others are formed based on information obtained from other sources. By practice here is meant the results of people's feelings and what they do about it (Kaliyaperumal, 2004). It is therefore noteworthy that for any significant change in the understanding of SDGs, positive attitude will be required by all since it is the aim of SDGs that no one should be left behind.

Nigeria has been reported to have had a slow kick off to both MDGs and SDGs. For instance, Idowu, Olaniran and Perumal reported that SDGs have not been internalized among the populace and are largely missing in scholarly Database and policy discourse in Nigeria. Furthermore, Emah (2023) also noted that although the country (Nigeria) set up structures for the implementation of SDGs, the progress towards the achievement of SDGs is generally slow. This could be as a result of low level of awareness, knowledge (and of cause attitude) of students especially physics students towards practices designed to enhance attainment of SDGs in Anambra State, Nigeria. Nigeria is one of the countries that presented its voluntary national review (VNR) in 2017 and 2020 on the implementation of SDGs at a high-level political forum on SDGs and she ranked 160 on the 2020 SDGs index (Adedeji et al., 2021). It is therefore our concern in this study to examine the level of awareness and knowledge of and attitude towards practices enhancing the attainment of SDGs among physics students in Anambra State, Nigeria

Research Questions

The following research questions were posed to guide the study

1. What are students' sources of awareness on sustainable development goals?
2. What is the level of awareness of practices enhancing attainment of sustainable development goals possessed by physics students in Anambra State, Nigeria?

3. What is the level of knowledge of practices enhancing attainment of sustainable development goals possessed by physics students in Anambra State, Nigeria?
4. What is the attitude of physics students towards practices enhancing attainment of sustainable development goals in Anambra State, Nigeria?

METHODS

The study was carried out in Anambra State, S. E., Nigeria using a survey research design. The study was guided by four research questions. The population of the study was all physics students in all the 261 secondary schools in Anambra State totaling 9,539 in 2020/2021 academic session. A multi-stage sampling approach was used in constituting the sample. Firstly, simple random sampling technique was used to select one Education Zone in the State. Awka Education Zone was selected. Secondly, one local government area was again randomly selected in which Awka south was selected. The next stage was the purposive selection of only the co-educational schools in the local government area totaling 15. Though gender was not a variable in this study, the co-educational schools were selected to ensure a fair gender balance of respondents. The 15 schools were stratified based on their male and female physics students' population, and 10 % of males and 10 % of females were each selected using simple random sampling technique for the selection of individual students. A total of 272 students were thus sampled and used for the study.

Data were collected using three instruments, namely: students' level of awareness questionnaire (SLAQ), students' knowledge level questionnaire (SKLQ) and students' attitude scale (SAS). The instruments were duly validated by experts and tested for internal consistency using Cronbach alpha statistic which yielded reliability indices of 0.78, 0.83 and 0.72 respectively for SLAQ, SKLQ and SAI. SLAQ contains nine items, SKLQ, 15 items while SAS contains 12 items.

The items were arranged in 4-point rating scale of strongly agree (SA) = 4, Agree (A) = 3, disagree (D) =2 and strongly disagree (SD) = 1. The statistical mean was obtained using the following weighting format

$$mean = \frac{4+3+2+1}{4} = \frac{10}{4} = 2.50$$

This implies that any item with a mean score of 2.50 and above is possessed to a high level and any with a mean score of less than 2.50 is possessed to a low level

For students who participated in the study, consent of their parents and the school management were sought and obtained.

RESULTS

The results of the study were analyzed and presented in line with the research questions as shown.

Research Question 1

What are students' sources of awareness on sustainable development goals?

Table 1: mean scores and standard deviation of students' source of awareness regarding sustainable development goal in Anambra State

S/N	I came to learn about SDGs through	N	SA	A	D	SD	X	σ	Decision
1	formal education (nursery to secondary schools)	272	22	62	101	81	2.14	0.93	reject
2	traditional media (radio, press, TV etc.)	272	28	95	96	59	2.29	0.61	reject

3	email and social networks	272	74	76	68	54	2.63	0.73	accept
4	personal studies of SDGs	272	21	64	86	101	2.02	0.62	reject
5	exposure to subjects that has SDGs topics	272	37	93	98	44	2.45	1.02	accept
6	school clubs	272	88	79	76	29	2.83	0.66	accept
7	lectures/seminars/conferences	272	42	52	81	97	2.14	0.98	reject
8	friends and colleagues	272	70	89	66	47	2.67	0.86	accept
9	internet	272	68	126	54	24	2.87	0.53	accept
10	mass media	272	55	82	94	41	2.56	0.75	accept
11	fun activities (e.g. SDGs games)	272	69	131	57	15	2.93	0.71	accept
	Cluster mean						2.50		

The result in Table 1 shows that the respondents hold that their highest source of awareness about SDGs was from fun activities and internet with mean scores of 2.93 and 2.87 respectively. Other sources were school clubs (2.83), friends and colleagues (2.67), email and social networks (2.63), mass media (2.56), exposure to subjects that has SDGs topics (2.45), traditional media (2.29), formal education (2.14), lectures/seminars/conferences (2.14) and personal studies of SDGs (2.02).

Research Question 2

What is the level of awareness of practices enhancing attainment of sustainable development goals possessed by physics students in Anambra State, Nigeria? Data in relation to this research question were collected and presented in Table 2. The statistical mean (X) was used to answer the research question; the standard deviation (σ) to show the homogeneity in the opinions of the respondents.

Table 2: mean scores and standard deviation of level of awareness of practices enhancing attainment of sustainable development goals possessed by physics students in Anambra State, Nigeria

S/N	Level of awareness of SDGs practices	N	SA	A	D	SD	X	σ	Decision
I am aware that									
1	there exist the 17 SDGs	272	62	84	55	71	2.64	0.98	agree
2	the world has been involved for some years in activities that will enhance SDGs	272	63	98	56	55	2.62	1.11	agree
3	sustainability is a global issue	272	76	111	27	58	2.75	0.96	agree
4	sustainability needs global response	272	81	77	70	44	2.83	0.85	disagree
5	everyone is obliged to face the issue of sustainability	272	69	91	45	67	2.60	1.79	agree
6	a new global plan to navigate humanity toward a more sustainable path was developed during UN	272	14	41	110	97	1.82	0.67	disagree

	conference in Rio de Janeiro, Brazil, 2012								
7	the aim of SDGs is to secure a sustainable, peaceful. Prosperous and equitable life on earth for this and for future generations	272	95	73	38	66	2.72	0.89	agree
8	I have a responsibility towards achieving SDGs	272	98	141	10	23	3.08	0.82	agree
9	the SDGs was signed by 193 world leaders at the UN conference in 2015	272	68	0	134	1.04	1.87	0.66	disagree
	Cluster mean						**2.55**		

The results in Table 2 shows that the respondents possess high level of awareness of the practices enhancing SDGs in Anambra state, Nigeria. The conclusion was drawn from the fact that the mean score of 2.55 obtained was greater than the criterion mean of 2.50. However, the awareness level for item numbers 6 and 9 was low.

Research Question 3

What is the level of knowledge of practices enhancing attainment of sustainable development goals possessed by physics students in Anambra State, Nigeria? Data in relation to research question 2 were collected and presented in Table 3. The statistical mean (X) was used to answer the research question, the standard deviation (SD) shows the harmony in the opinion of the respondents.

Table 3: mean scores and standard deviation of level of knowledge of practices enhancing attainment of sustainable development goals possessed by physics students in Anambra State, Nigeria

S/N	Level of knowledge of SDGs practices	N	SA	A	D	SD	X	σ	Decision
1	I have only little knowledge about SDGs	272	63	106	57	46	2.68	1.01	agree
2	I know the number of items in the SDGs and what they are	272	45	53	102	54	2.33	0.97	disagree
3	I know the three domains identified in sustainability	272	10	29	156	77	1.88	0.58	disagree
4	I have a lot of things to say about SDGs	272	44	62	78	88	2.23	0.88	disagree
5	I can answer many questions on SDGs	272	48	47	98	79	2.24	1.92	disagree
6	the content I learn about SDGs are interesting	272	133	99	36	4	3.26	0.91	agree
7	I have a lot of knowledge about SDGs	272	34	66	124	48	2.32	1.02	disagree
8	knowing more about SDGs has improved my lifestyle	272	75	136	50	11	3.01	0.84	agree
9	I know that SDGs is both present, but especially future-oriented	272	64	91	83	34	2.68	0.76	disagree

10	I know basic skills and transferable competences involved in SDGs		39	47	148	38	2.32	0.84	disagree
11	I know the time frame for which the SDGs are targeted or designated		18	14	43	197	1.46	0.61	disagree
12	I know the countries to which SDGs are addressed disagree		6	12	252	2	2.09	0.69	disagree
13	I have little knowledge of SDGs		29	74	87	82	2.18	0.77	disagree
14	I have knowledge of the five P_s of SDGs		0	0	269	3	1.99	0.58	disagree
15	my rights and responsibilities regarding sustainable development goals are very clear to me		4	22	213	33	1.99	0.72	disagree
	Cluster mean						**2.55**		

The data presented in Table 3 reveals that physics students in Anambra State have low level of knowledge of practices enhancing sustainable development goals in Anambra State of Nigeria. This is evident from the cluster mean scores of 2.31 obtained from their responses which is less than the cut-off point of 2.50. Only four items (numbers 2, 6, 8 and 9) out 15 have cut-off more than 2.50

Research Questions 4

What is the attitude of physics students towards practices enhancing attainment of sustainable development goals in Awka South Local Government of Anambra State, Nigeria? Data in relation to research question 3 were collected and presented in Table 4. The statistical mean (X) was used to answer the research question; the standard deviation (σ) shows the harmony in the opinion of the respondents.

Table 4: mean scores and standard deviation of students' responses on the attitude of physics students towards practices enhancing attainment of sustainable development goals in Anambra State, Nigeria

S/N	Physics students' attitude towards SDGs practices	N	SA	A	D	SD	X	Std. Dev (σ)	Decision
1	I strive daily to learn more about SDGs	272	30	46	70	130	1.94	0.53	disagree
2	discussing sustainable development issues give me joy	272	52	58	98	64	2.70	0.71	agree
3	I read a lot to know the recent happenings in SDGs	272	41	46	31	154	1.90	0.98	disagree
4	I strive to know more about SDGs	272	63	54	100	55	2.46	1.21	disagree
5	I take part in an extra-curricular training classes on SDGs	272	8	28	167	69	1.72	0.62	disagree

6	I enjoy engaging in interactive sessions on SDGs issues	272	71	42	156	3	2.67	0.99	agree
7	I am pertinent about maintaining a clean and sustainable environment	272	59	49	37	127	2.15	0.78	disagree
8	As a physics student, I engage my peers in discussions about the damage that can be caused by pollutants to the environment	272	61	74	86	51	2.53	0.74	agree
9	I am involved in afforestation activities and encourage others to join me in creating green environment	272	54	60	98	60	2.40	0.88	disagree
10	I have much interest in recycling waste materials	272	13	36	96	127	1.76	0.61	disagree
11	I feel I do not have time to get involved in such activities	272	47	91	106	32	2.59	0.83	agree
12	I dispose waste items in gutters	272	48	88	63	73	2.41	0.86	disagree
	Cluster mean						**2.55**		

Data in Table 4 reveal that physics students in Anambra State display negative attitude toward practices enhancing the attainment of sustainable development goals. This is inferred from the cluster mean of 2.27 which is less than the criterion mean of 2.50. However, item numbers 2, 6, 8 and 11 have mean more than the criterion mean of 2.50 showing that respondents have positive attitude towards those items.

DISCUSSIONS

From research question 1, physics students in Anambra state majorly agreed that their source of awareness of SDGs was mainly from fun activities and internet while the least awareness was gained from personal studies. The finding is at variance with that of Omisoro et al. (2017) who reported that students in a university in South Western Nigeria gained their commonest source awareness about SDGs through radio / TV (39.6%). However, the findings of the present study agreed with that of same author that the second commonest source of awareness was from the internet (36.5 %).

As can be inferred from Table 2, physics students in Anambra state possess high level of awareness of practices enhancing attainment of SDGs. The finding agrees with that of Shehu and Shehu (2018) who reported that clinical medical students of Bingham university, Jos has good awareness about SDGs with over 80 % of the students being aware. It also aligns with the result obtained by Afrez and Ilham (2020) who noted that the overall awareness of university of Malaya students towards SDGs is high.

In Table 3, it was observed that physics students have low level of knowledge of practices that can enhance SDGs in Anambra State, Nigeria. The result concurred well with that of Omisore et al. (2017), who reported low level of knowledge of SDGs in a university community in South Western Nigeria. The result of the study, however is in contrast with that reported by Talpada and Sarates (2019) who in their study to assess the knowledge and attitude regarding selected SDGs among peripheral health workers working in PHCs of Anand District observed average knowledge among those students. Still, contrary to our finding, Ahmed and Ariffin (2018) discovered high level of knowledge towards sustainable consumption among university students in Selangor, Malaysia. The low level observed by the present study is probably not unconnected with the fact that

secondary school students are not yet seriously involved in research since they are still battling with content knowledge of their core subjects.

Table 4 shows that the respondents exhibit poor attitude towards practices that can enhance attainment of SDGs in Anambra State, Nigeria. The reason for this could be as a result of low level of knowledge of SDGs and practices enhancing its attainment. The finding of the present study is at variance with that of Ahmed and Ariffin (2018) who reported a moderate level of attitude towards practices enhancing sustainable development goals among university students of Selangor, Malaysia.

CONCLUSION

From the result of the study, it was concluded that physics students in Anambra State gained majority of their awareness of sustainable development goals and the practices enhancing their attainment from fun and the internet; to a high extent they are aware of the practices enhancing the attainment of sustainable development goals; they possess low level of knowledge of such practices and exhibit poor attitude towards the practices enhancing the attainment of SDGs. Hence, efforts should be put in place to improve physics students' level of knowledge of and attitude towards SDGs.

RECOMMENDATIONS

Based on the findings of the present study, the following recommendations were proffered;

1. School authorities and teachers should encourage secondary school students to use the internet for educational purposes.
2. Strategies including policies and programmes to be put in place by policy-makers to integrate the SDGs in secondary school system
3. Schools to embrace sustainability principles in their management system
4. Education institutions to integrate the principles of SDGs into their mission statements with emphasis on today's development not adversely affecting future development
5. Students should be taught and be educated on the SDGs through teaching, information dissemination media and campaigns to improve their knowledge, create awareness, develop positive attitude and help them understand their roles in the fulfilment of the ongoing SDGs agenda.

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